IN THE SPECIFICATION:

Please amend paragraph number **[0012]** as follows:

[0012] Conventionally, the problem of carbon fiber fragility has been addressed by dissolving the elastomer into a solution with an appropriate organic solvent to lower the viscosity of the elastomer or elastomer mixture. Suitable solvents include, by way of example, hydrocarbons such as hexanes, heptanes, and/or cyclohexane. The frangible graphitized carbon fibers can then be mixed with the solution in, for example, a sigma-blade mixer without significant breakage of or damage to the carbon fibers. The material is then sheeted out and the solvent is allowed to evaporate at ambient atmosphere or in an oven.

Please amend paragraph number **[0029]** as follows:

[0029] The present insulation compositions 10, when in a cured state, are especially suited for disposal on the interior surface of the rocket motor case 12, as shown in FIGS. 1A and 1B. Typically, a liner 14 is interposed between the insulation composition 10 and propellant 16. The insulation composition 10 and the liner 14 serve to protect the case 12 from the extreme conditions produced by the propellant 16 as it undergoes combustion reactions and is exhausted through nozzle assembly 18. Methods for loading a rocket motor case 12 with the insulation composition 10, the liner 14, and the propellant 16 are known to those skilled in the art, and can be readily adapted within the skill of the art without undue experimentation to incorporate the insulation composition 10 of this invention.

Please amend paragraph number **[0033]** as follows:

[0033] The curing package can include sulfur curing agents and/or peroxide curing agents for cross-linking and/or chain extending polymers or polymer precursors (e.g., prepolymers). Suitable insoluble sulfur curing agents are AKROSPERSE® IS-70 from Akrochem Corporation of Akron, Ohio, and CRYSTEX® OT-20 available through Charles H. Haynes, Inc. Other forms of elemental sulfur can also be used. Suitable peroxide curing agents include dicumyl peroxide, 2,5-dimethyl-2,5-bis-(t-butylperoxy)hexane,

2,5-dimethyl-2,5-bis-(benzoylperoxy)hexane, 2,5-dimethyl-2,5-di(t-butylperoxy)-3-hexane, n-butyl-4,4-bis-(t-butylperoxyl)valerate, 4,4'-methyl-bis-(cyclohexylamine)carbomate, 1,1-bis-(t-butylperoxy)-3,3,5-trimethylcyclohexane, α,α'-bis-(t-butylperoxy) -diisopropylbenzene, 2,5-dimethyl-2,5-bis-(t-butylperoxy)hexyne-3, and t-butyl perbenzoate. A commercially available peroxide is available under the trade name DI-CUP® 40KE, which comprises about 40% dicumyl peroxide on a clay ~~carrier. (The~~ carrier (the clay carrier is available from Burgess Pigment Company of Sandersville, ~~Georgia.)~~ Georgia). Another suitable curing agent (besides sulfur and peroxide curing agents) is bromomethyl alkylated phenolic resin, available as SP-1056 from Schenectady Int'l, Inc. of Schenectady, N.Y.

Please amend paragraph number **[0034]** as follows:

[0034] In typical formulations, the curing agent comprises from about 0.5 phr to about 8 ~~phr,~~ phr and, more ~~preferably~~ preferably, about 2 phr to about 5 phr. As referred to herein and generally accepted in the art, "phr" means parts by weight per one hundred parts by weight polymer.

Please amend paragraph number **[0041]** as follows:

[0041] Fillers that function as flame retardants, or char-forming additives, can be used, if desired, in lesser amounts than most other additives, which makes it easier to formulate the insulation with good mechanical properties. Both inorganic and organic flame retardants are expected to be useful in the present invention. Examples of organic flame retardants include: chlorinated hydrocarbon, available as DECHLORANE®, in combination with antimony oxide (optionally with diisodecyl phthalate (DIDP)) or hydrated alumina (such as Hydral 710 aluminum trihydrate); melamine cyanurate; phosphate and phosphate derivatives, available as PHOS-CHEK® P/30 (ammonium polyphosphate) produced by Monsanto Chemical Company of St. Louis, Missouri, which can be used alone or in combination with pentaerythritol; DECHLORANE PLUS® 25 from Occidental Chemical Corporation of Niagara Falls, N.Y.; and ~~silcone~~ silicone resin, such as DC4-7051 available through Dow Corning. An example of an

inorganic flame retardant is zinc-borate, such as FIREBRAKE® ZB from U.S. Borax Inc. of Valencia, California.

Please amend paragraph number **[0046]** as follows:

[0046] In the illustrated embodiment, a single rotatable screw 24 is received in the chamber 22. Generally, the screw 24 is from about 30 mm to about ~~200 nm~~ 200 mm in diameter and has a length-to-diameter (L:D) ratio of from about 8:1 to about 20:1, although this invention is not so limited, given the flexibility of uniting a desired number of modules 20.

Please amend paragraph number **[0048]** as follows:

[0048] The housing module 20 has kneading pins (also referred to as kneading teeth) 40, which in the illustrated embodiment have diamond-shaped cross sections. Each of the kneading ~~pins 20~~ pins 40 extends from an inner periphery thereof along a respective radial direction of the housing module 20. As shown in FIG. 5, the kneading ~~pins 20~~ pins 40 collectively define three kneading pin columns 42a, 42b, and 42c, each ~~spaced 120~~ spaced 120° from each other about the circumference of the screw 24 and dimensioned so as to be receivable in the gaps 34. The kneading teeth 40 can be hollow and connected to a supply means for permitting the injection of fluid constituents through the kneading teeth and directly into the melt.

Please amend paragraph number **[0050]** as follows:

[0050] The rotating/oscillating movement of the screw 24 causes the kneading pins 40 to traverse across the faces of respective screw flights 30, thus generating a shear which cleans the faces of the screw flights 30 and effects dispersion and distributive mixing. This relative movement between the screw flights 30 and the kneading pins 40 is explained below in more detail with reference to FIG. 6, which shows selected pins 40a and 40c and their respective paths of movement relative to the screw 24. As shown in FIG. 6, the kneading pins 40 ~~moves~~ move

across the faces of the screw flights 30 and across the gaps 34, thereby cleaning the faces of the screw flights 30 and causing dispersion and distributive mixing to take place.

Please amend paragraph number **[0065]** as follows:

[0065] The tests were performed in a char motor, such as the one illustrated in FIG. 7. Char motors are constructed to evaluate the ablative properties of solid rocket motor case insulation materials. A char motor includes a propellant beaker 70 to provide the combustion gases, evaluation chambers to hold the test materials, and a constricting nozzle to produce the required pressure. The evaluation chamber is divided into three sections. The first one is a "low velocity" cylindrical region 72 about eight inches long and eight inches in diameter (approximately the same diameter as the propellant beaker 70). A short conical transition chamber 74 constricts the gas flow into a diameter of about 2 inches and vents the propellant gases into a ~~22 inch~~ 22-inch long conical test chamber. This test chamber is divided into the "mid-velocity" region 76 and "high-velocity" region 78.